

Appl. No. 10/719,897
Amdt. Dated August 13, 2008
Reply to Office Action of March 13, 2008

Attorney Docket No. 81707.0190
Customer No. 26021

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-8. (Canceled)

9. (Previously presented) A method of producing a multi-layer circuit board by preparing a circuit-parts sheet which comprises a photo-cured ceramic sheet and a circuit-forming pattern through the steps (a) to (e) described below and, then, conducting the steps (f) to (h) described below:

- (a) forming the circuit-forming pattern having light-nontransmitting property on a surface of a carrier film having light-transmitting property;
- (b) forming a photo-curable ceramic coating layer having a thickness not smaller than the thickness of said circuit-forming pattern and in which said circuit-forming pattern is buried, by applying a photo-curable slurry containing an electrically insulating ceramic material on the surface of the carrier film on which said circuit-forming pattern is formed;
- (c) forming a photo-cured ceramic sheet by photo-curing said photo-curable ceramic coating layer which is not present on the circuit-forming pattern by the irradiation with light from the back surface of said carrier film, wherein the photo-curable ceramic coating layer which is present on the circuit-forming pattern is not photo-cured;
- (d) removing uncured portions of said photo-curable ceramic coating layer by using a developing solution;
- (e) peeling off said carrier film;

- (f) preparing a plurality of pieces of the circuit-parts sheets obtained through the steps (a) to (e);
- (g) laminating a plurality of pieces of the circuit-parts sheets; and
- (h) firing the laminate thereof.

10. (Previously presented) A method of producing a multi-layer circuit board by preparing a circuit-parts sheet which comprises a photo-cured ceramic sheet and a circuit-forming pattern through the steps (a) to (d) described below and, then, conducting the steps (e) to (h) described below:

- (a) forming the circuit-forming pattern having light-nontransmitting property on a surface of a carrier film having light-transmitting property;
- (b) forming a photo-curable ceramic coating layer having a thickness not smaller than the thickness of said circuit-forming pattern and in which said circuit-forming pattern is buried, by applying a photo-curable slurry containing an electrically insulating ceramic material on the surface of the carrier film on which said circuit-forming pattern is formed;
- (c) forming a photo-cured ceramic sheet by photo-curing said photo-curable ceramic coating layer which is not present on the circuit-forming pattern by the irradiation with light from the back surface of said carrier film, wherein the photo-curable ceramic coating layer which is present on the circuit-forming pattern is not photo-cured;
- (d) removing uncured portions of said photo-curable ceramic coating layer by using a developing solution;
- (e) preparing a plurality of pieces of the circuit-parts sheets with the carrier film obtained through the steps (a) to (d);
- (f) laminating another circuit-parts sheet with the carrier film on one circuit-parts sheet with the carrier film in a manner that the circuit-parts sheets

are opposed to each other, and peeling off the carrier film from the other circuit-parts sheet;

(g) fabricating a laminate having a plurality of pieces of the circuit-parts sheets by repeating the step (f); and

(h) peeling off the carrier film from said one circuit-parts sheet of the obtained laminate, followed by firing.

11. (Original) A method of producing a multi-layer circuit board according to claim 10, wherein both said photo-cured ceramic sheet and said circuit-forming pattern have thicknesses of not larger than 50 μm , and a difference in the thickness between said photo-cured ceramic sheet and the circuit-forming pattern is not larger than 5 μm .

12. (Original) A method of producing a multi-layer circuit board according to claim 10, wherein said circuit-forming pattern is formed by using at least either one of an electrically conducting material or an electrically insulating ceramic material.

13. (Original) A method of producing a multi-layer circuit board according to claim 12, wherein said electrically conducting material contains a metal powder and an organic binder.

14. (Original) A method of producing a multi-layer circuit board according to claim 12, wherein said electrically conducting material is a metal foil.

15. (Previously presented) A method of producing a multi-layer circuit board according to claim 10, wherein said circuit-forming pattern and a thermally extinguishing pattern having a light-non transmitting property are so formed in

said step (a) that said circuit-forming pattern and said thermally extinguishing pattern will not be overlapped one upon the other, and the photo-curable ceramic coating layer is so formed in said step (b) that said circuit-forming pattern and said thermally extinguishing pattern are buried therein.

16. (Original) A method of producing a multi-layer circuit board according to claim 15, wherein said thermally extinguishing pattern is formed by using a thermally disintegrating resin composition.

17. (Original) A method of producing a multi-layer circuit board according to claim 10, wherein one surface of said cured ceramic sheet has a maximum surface roughness R_{max} (JIS B 0601) of not smaller than $1 \mu m$, and the laminate is so formed that the roughened surfaces are opposed to each other.

18. (Previously presented) A method of producing a multi-layer circuit board by preparing a circuit-parts sheet which comprises a photo-cured ceramic sheet and a circuit-forming pattern secured to said sheet and is held on a surface of a carrier film having light-transmitting property through the steps (a) to (d) described below and, then, laminating a ceramic green sheet having through-holes filled with a conducting paste on said circuit-parts sheet, and peeling off the carrier film from the obtained laminate, followed by firing:

- (a) forming the circuit-forming pattern having light non-transmitting property on the surface of a carrier film having light-transmitting property;
- (b) forming a photo-curable ceramic coating layer having a thickness not smaller than the thickness of said circuit-forming pattern and in which said circuit-forming pattern is buried, by applying a photo-curable slurry containing an

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electrically insulating ceramic material on the surface of the carrier film on which said circuit-forming pattern is formed;

(c) forming a photo-cured ceramic sheet by photo-curing said photo-curable ceramic coating layer which is not present on the circuit-forming pattern by the irradiation with light from the back surface of said carrier film, wherein the photo-curable ceramic coating layer which is present on the circuit-forming pattern is not photo-cured; and

(d) removing uncured portions of said photo-curable ceramic coating layer by using a developing solution.

19-21. (Canceled)